

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year)
13 June 2001 (13.06.01)

International application No.
PCT/GB00/03366

Applicant's or agent's file reference
AJB/P32411

International filing date (day/month/year)
01 September 2000 (01.09.00)

Priority date (day/month/year)
03 September 1999 (03.09.99)

Applicant

CHO, Sungwook et al

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
28 March 2001 (28.03.01)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was ☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Zakaria EL KHODARY

Telephone No.: (41-22) 338.83.38

PCT

**NOTIFICATION OF THE RECORDING
 OF A CHANGE**

(PCT Rule 92bis.1 and
 Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

BLAKEY, Alison
 GlaxoSmithKline
 Corporate Intellectual Property
 (CN9.25.1)
 980 Great West Road
 Brentford
 Middlesex TW8 9GS
 ROYAUME-UNI

Date of mailing (day/month/year) 01 March 2002 (01.03.02)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference AJB/P32411	
International application No. PCT/GB00/03366	International filing date (day/month/year) 01 September 2000 (01.09.00)

1. The following indications appeared on record concerning:

☐ the applicant ☐ the inventor ☒ the agent ☐ the common representative

Name and Address BLAKEY, Alison SmithKline Beecham Two New Horizons Court Brentford Middlesex TW8 9EP United Kingdom	State of Nationality	State of Residence
	Telephone No. +44 127 964 4396	
	Facsimile No. +44 20 8975 6294	
	Teleprinter No. 858270 ZENAGR G	

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person ☐ the name ☒ the address ☐ the nationality ☐ the residence

Name and Address BLAKEY, Alison GlaxoSmithKline Corporate Intellectual Property (CN9.25.1) 980 Great West Road Brentford Middlesex TW8 9GS United Kingdom	State of Nationality	State of Residence
	Telephone No. +44(0) 20 8047 5000	
	Facsimile No. +44(0) 20 8047 6894	
	Teleprinter No. 858270 ZENAGR G	

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

☒ the receiving Office ☐ the designated Offices concerned
☐ the International Searching Authority ☒ the elected Offices concerned
☐ the International Preliminary Examining Authority ☐ other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Jaime LEITAO
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

10/070281

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PATENT COOPERATION TREATY

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RECD 16 NOV 2001

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference AJB/P32411		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB00/03366	International filing date (day/month/year) 01/09/2000	Priority date (day/month/year) 03/09/1999	
International Patent Classification (IPC) or national classification and IPC C07D471/04			
Applicant SB PHARMCO PUERTO RICO INC et al.			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input checked="" type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application 			
Date of submission of the demand 28/03/2001		Date of completion of this report 14.11.2001	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized officer Rivat, C Telephone No. +49 89 2399 2191	



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/03366

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):
Description, pages:

1-7 as originally filed

Claims, No.:

1-11 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
 - ☐ the language of publication of the international application (under Rule 48.3(b)).
 - ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:
- ☐ contained in the international application in written form.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority in written form.
 - ☐ furnished subsequently to this Authority in computer readable form.
 - ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
 - ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.
4. The amendments have resulted in the cancellation of:
- ☐ the description, pages:
 - ☐ the claims, Nos.:
 - ☐ the drawings, sheets:
5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/03366

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application.
- ☒ claims Nos. 4.

because:

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):
 - ☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 4 are so unclear that no meaningful opinion could be formed (*specify*):
see separate sheet
 - ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
 - ☐ no international search report has been established for the said claims Nos. .
2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:
- ☐ the written form has not been furnished or does not comply with the standard.
 - ☐ the computer readable form has not been furnished or does not comply with the standard.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	3,5,8
	No:	Claims	1,2,6,7,9-11
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-3,5-11
Industrial applicability (IA)	Yes:	Claims	1-3,5-11

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB00/03366

No: Claims

2. Citations and explanations
see separate sheet

Reference is made to the following documents :

D1: EP-A-0 688 772

D2: WO-A-98/42705

Re Item III

Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

Since the compounds of formula (II) appear to be solids, it is not at present clear how the subject-matter of claim 4 could actually be implemented. The examples disclosed in the prior art documents as well as in the present application only refer to mass in grams of compound (II) so that it was not possible to check if the condition as disclosed in claim 4 is actually fulfilled or not. No further indication could be found in the description with regard to the meaning of this ratio.

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

- 1.1. Document D1 discloses quinoline carboxylic acid derivatives which exhibit an antibacterial activity. Amongst other, examples 89, 97, 102, 106, 180 and 196 describe processes of synthesis of compounds falling within the definition of formula (I) of the present application. These processes differ from the subject-matter of the present application only in the absence of water. However, such a technical feature is explicitly disclosed in claim 8 of D1 so that the subject-matter of claims 1-2 of the present application does not meet the requirements for novelty set forth in Art. 33(2) PCT.

The different features of claims 6 (ambient temperature already known from D1), 7 (p. 10, l. 46 and cl.9) and 9 (ex. 89, 97, 102, 106, 180 and 196) are also disclosed in D1 and can therefore not be considered as novel (Art. 33(2) PCT).

- 1.2. Document D2 described a process of synthesis for the obtention of salts of naphthyridine carboxylic acid derivatives from the corresponding carboxylic acid. The compound of claim 11 of the present application is disclosed as a particularly preferred embodiment of D2. Since D2 explicitly refers to D1 for the synthesis of the starting material, i.e. the naphthyridine carboxylic acid derivative, the subject-matter of claims 10 and 11 cannot either be considered as fulfilling the requirements for novelty of Art. 33(2) PCT.
2. Document D1 is considered to represent the most relevant state of the art. The subject-matter of claims 5 and 8 differs from D1 in the amount of the different products used, claim 3 differs from D1 in that a new solvent is used (water alone).

The problem to be solved by the present invention may therefore be regarded as the provision of an alternative process of synthesis for naphthyridine carboxylic acid derivatives.

Claims 5 and 8 disclose a specific range for the amount of compound (III) and base respectively. Although these features were not described in D1, it is not at present apparent how a specific range very near from the data already known from the prior art (according to the ex. of D1, the amount of (III) based on (II) is 1 or 1.1 whereas the amount of base compared to (II) is about 2.7) could actually provide a contribution over the prior art.

Claim 3 reveals the use of water as an appropriate solvent to carry out the reaction. The use of water in combination with other solvents is already disclosed in D1 (claim 8). This tends to prove that the presence of water does not affect the reaction which is actually the only limitation put forward in D1 (p. 10, l. 36-37) in the choice of the solvent. The choice of water as the solvent would have therefore appeared obvious to the skilled man. Moreover, no examples are available in the application with regard to the use of water as the solvent. The problem can therefore not be considered as solved according to the solution proposed in claim 3.

The subject-matter of claims 3, 5 and 8 cannot be considered as involving an inventive step (Art. 33(3) PCT).

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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference AJB/P32411	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/GB 00/ 03366	International filing date (day/month/year) 01/09/2000	(Earliest) Priority Date (day/month/year) 03/09/1999
Applicant SB PHARMCO PUERTO RICO INC.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

PROCESS FOR PRODUCTION OF NAPHTHYRIDINE-3-CARBOXYLIC ACID DERIVATIVES

5. With regard to the **abstract**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. _____

☐ as suggested by the applicant.

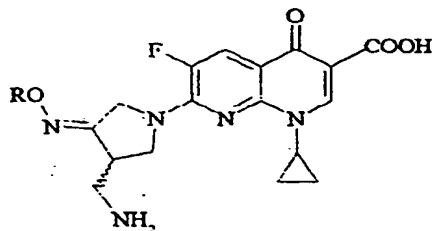
☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☐ None of the figures.

Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

A process for the production of Naphthyridine-3- carboxylic acid derivatives of formula (I) :



I

having antibacterial activity

INTERNATIONAL SEARCH REPORT

International Application No

PC 00/03366

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07D471/04 C07D207/22 C07B43/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07D C07B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 688 772 A (LG CHEMICAL LIMITED) 27 December 1995 (1995-12-27) cited in the application preparation 40,54; example 179	1,2,6,9
X	page 9, line 29-36 ---	11
X	WO 98 42705 A (CHOI HOON ;KIM AE RI (KR); LEE JIN HWA (KR); LEE TAE HEE (KR); NAM) 1 October 1998 (1998-10-01) cited in the application example 3 -----	11



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

° Special categories of cited documents :

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

Date of the actual completion of the international search

24 November 2000

Date of mailing of the international search report

08/12/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Seitner, I

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PC 00/03366

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0688772	A	27-12-1995	KR 131999 B	17-04-1998
			KR 222082 B	01-10-1999
			KR 222083 B	01-10-1999
			BR 1101096 A	18-04-2000
			CA 2151890 A,C	17-12-1995
			CN 1114959 A,B	17-01-1996
			DE 69509442 D	10-06-1999
			DE 69509442 T	02-09-1999
			DK 688772 T	01-11-1999
			JP 2742248 B	22-04-1998
			JP 8041050 A	13-02-1996
			RU 2120940 C	27-10-1998
			US 5869670 A	09-02-1999
			US 5962468 A	05-10-1999
			US 5633262 A	27-05-1997
			US 5698570 A	16-12-1997
			US 5840916 A	24-11-1998
			US 5776944 A	07-07-1998
WO 9842705	A	01-10-1998	AU 6636698 A	20-10-1998
			BG 103750 A	30-06-2000
			BR 9808290 A	16-05-2000
			CN 1251101 T	19-04-2000
			EP 0981527 A	01-03-2000
			JP 2000510484 T	15-08-2000
			NO 994595 A	21-09-1999
			PL 335812 A	22-05-2000